

24.1 GENERAL

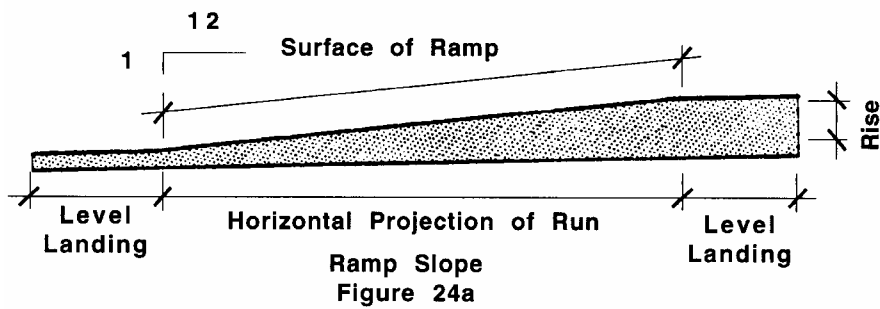
Any part of an *accessible route* with a slope greater than 1:20 (5%) shall be considered a *ramp* and shall comply with the requirements of 521 CMR 24.

24.2 SLOPE AND RISE

Ramps shall have the least possible slope.

24.2.1 The maximum slope of a *ramp* shall be 1:12 (8.3%), measured between any two points on the *ramp*. (There is no tolerance allowed on slope)

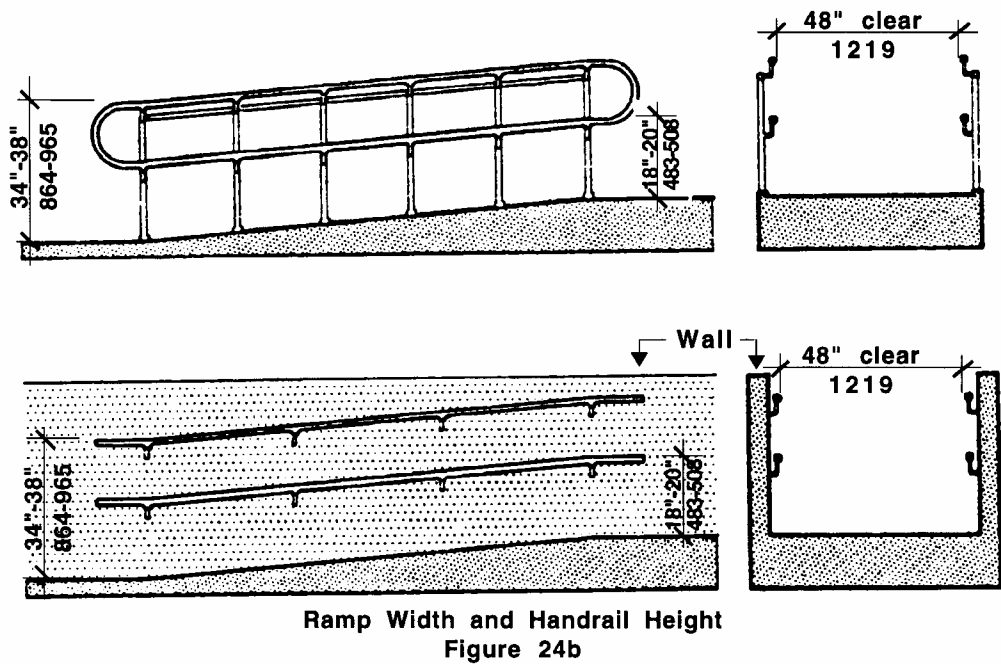
24.2.2 The maximum rise for any run shall be 30 inches (30" = 762mm). See Fig. 24a.



Exceptions: A slope between 1:10 (10%) and 1:12 (8.3%) is allowed for a single rise of a maximum three inches (3" = 76mm).

24.3 CLEAR WIDTH

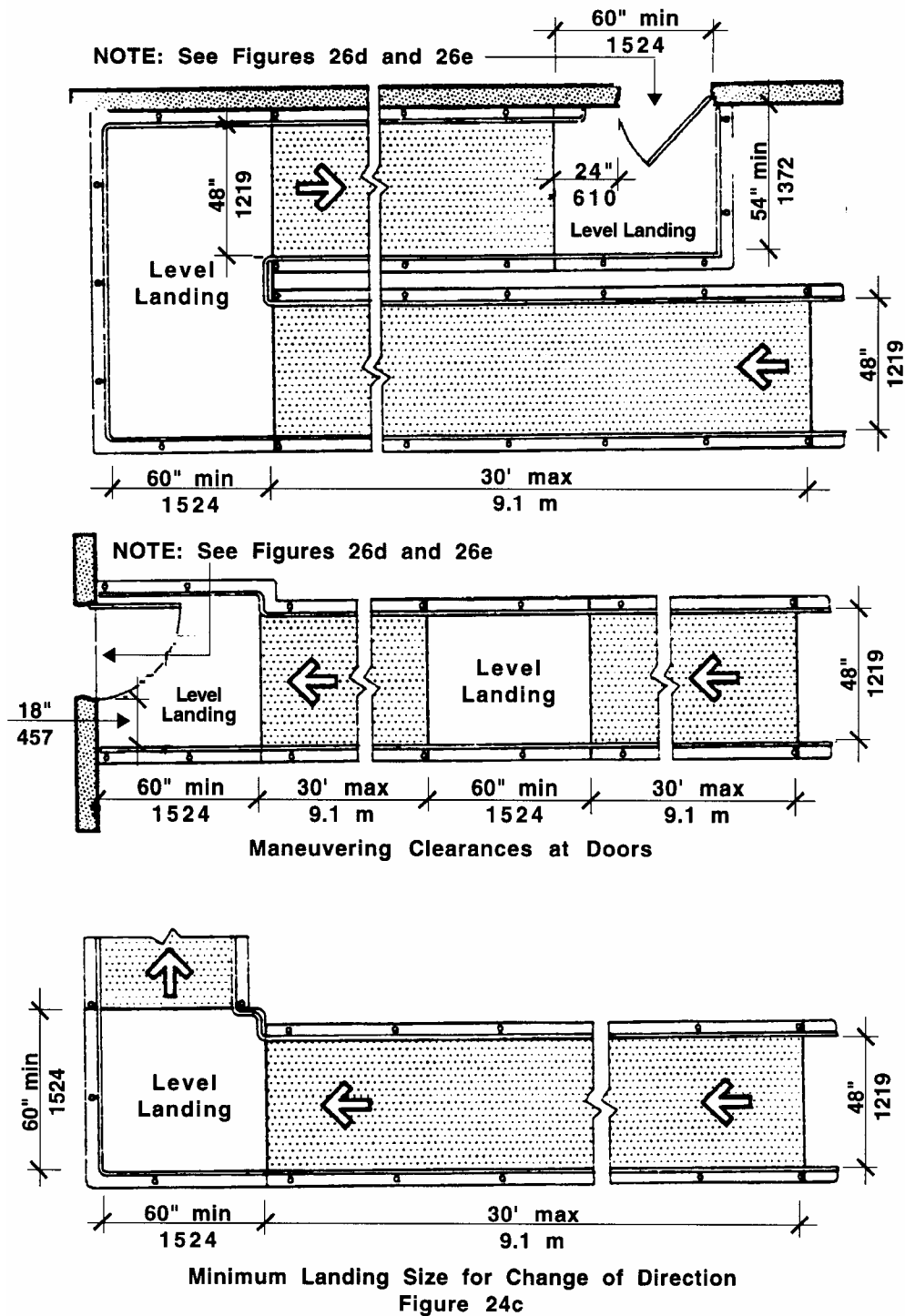
The minimum *clear* width of a *ramp* shall be 48 inches (48" = 1219mm), measured between the railings. See Fig. 24b.



24.4 LANDINGS

Ramps shall have landings for turning and resting. At a minimum, landings shall be located at the bottom and the top of each *ramp* and each *ramp* run, and whenever a *ramp* changes direction. The maximum length of a *ramp* run between landings shall not exceed 30 feet (30' = 9m). Landings shall have the following features: See Fig. 24c.

RAMPS



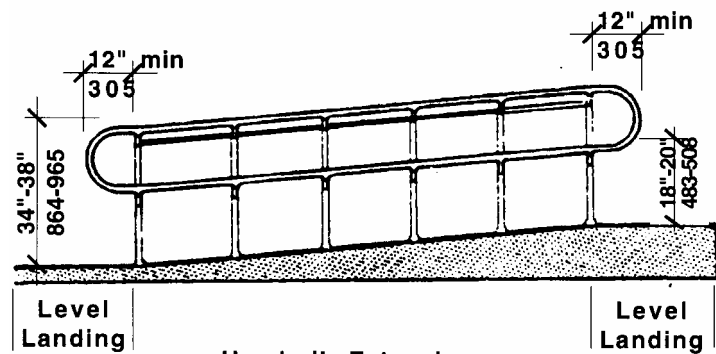
- 24.4.1 General: Landings shall be *level* and unobstructed by projections and door swings, except as permitted by **521 CMR 24.4.6**.
- 24.4.2 Width: The landing shall be at least as wide as the *ramp* run leading to it.
- 24.4.3 Length: The landing length shall be a minimum of 60 inches (60" = 1524mm) *clear*.
- 24.4.5 Dimensions for turning: If *ramps* change direction at landings, the minimum landing size shall be 60 inches by 60 inches (60" by 60" = 1524mm by 1524mm). **See Fig. 24c.**
- 24.4.6 Doorways at Landings: If a doorway is located at a landing, then the *level* area in front of the doorway shall also comply with maneuvering clearances in **Fig. 26d and 26e**.

24.5 HANDRAILS

Handrails shall be provided at all *ramps*. Handrails shall have the following features:

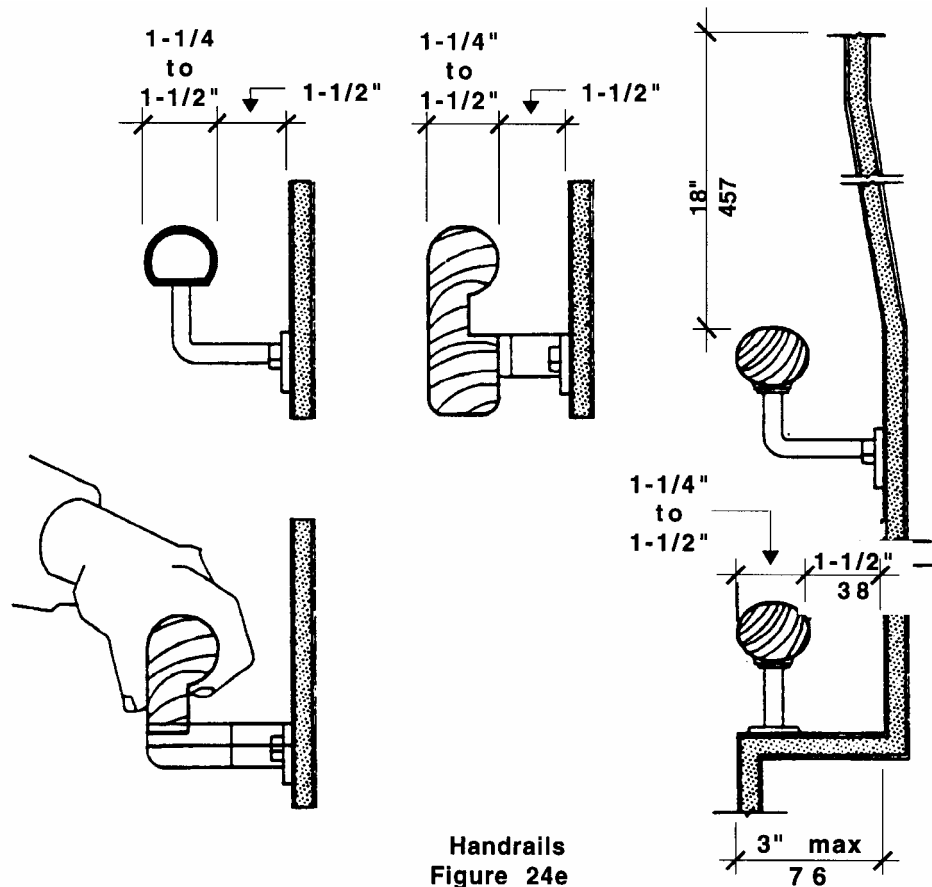
- 24.5.1 Location: Handrails shall be provided along both sides of *ramp* segments.

- 24.5.2 Heights: Handrails shall be provided in pairs, one at a height between 34 inches and 38 inches (34"-38" = 864mm - 965mm), and a lower one at a height between 18 and 20 inches (18"-20" = 457mm-508mm), measured vertically from the surface of the *ramp* to top of handrail.
- 24.5.3 Continuous surface: Handrails shall be continuous without interruption, except by doorways and openings, so that a hand can move from end to end without interruption.
- 24.5.4 Extensions: Handrails shall extend at least 12 inches (12" = 305mm) beyond the top and bottom of the *ramp* and shall be parallel with the floor or ground surface (see Fig. 24d), except where the extension would cause a safety hazard.



Handrail Extensions
Figure 24d

- 24.5.5 Size: The handgrip portion of the handrail shall not be less than 1¼ inches nominal (1¼" = 32mm) nor more than 1½ inches nominal (1½" = 38mm) in diameter.
- 24.5.6 Shape: The handgrip portion of the handrail shall be round or oval in cross-section. See Fig. 24e.
- 24.5.7 Surface: The gripping surface shall be free of any sharp or abrasive *elements*.
- 24.5.8 Clearance: When a handrail is mounted adjacent to a wall, the *clear space* between the handrail and the wall shall be 1½ inches (1½" = 38mm). Handrails may be located in a wall recess if the recess is a maximum of three inches (3" = 76mm) deep and extends at least 18 inches (18" = 457mm) above the top of the rail. See Fig. 24e.



Handrails
Figure 24e

RAMPS

- 24.5.9 End condition: Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.
- 24.5.10 Handrails shall not rotate within their fittings.

~~24.6~~ CROSS SLOPE

The *cross slope* of *ramp* surfaces shall be no greater than 1:50 (2%)

~~24.7~~ SURFACES

Ramp surfaces shall be stable, firm, and slip resistant. *Ramps* may be carpeted only if carpeting is installed in accordance with **521 CMR 29.3, Carpets**.

~~24.8~~ EDGE PROTECTION

Ramps and landings with drop-offs shall have edge curbs, walls, railings, or projecting surfaces that prevent people from slipping off the *ramp*. Edge curbs shall be a minimum of two inches (2" = 51mm) high.

~~24.9~~ OUTDOOR CONDITIONS

Outdoor *ramps* and their approaches shall be designed so that water will not accumulate on walking surfaces. If gratings are used to disperse water, they shall comply with **521 CMR 22, WALKWAYS**.

~~24.10~~ CIRCULAR RAMPS

Circular *ramps* are not permitted, except with the approval of this *Board*.